

14. (*Unamended*) A semiconductor laser apparatus for use in an optical pickup using a three-beam scheme for optical disks, the semiconductor layer apparatus comprising a semiconductor laser chip whose bottom is die-bonded to a bonding surface with a conductive die-bonding paste, said semiconductor laser chip including a light-emitting point at each of opposed end surfaces thereof,

where the conductive die-bonding paste adheres to a lower part of each end surface of the chip from the bottom up to a height below the light emitting point so that when the apparatus is used in the optical pickup an auxiliary beam directed from an optical disk to the lower part of one of the end surfaces is scattered by the conductive die-bonding paste adhering thereto.

REMARKS

This is in response to the Office Action dated February 26, 2002. Claim 10 has been canceled. Thus, claims 1-3 and 11-16 are now pending. Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page(s) is captioned "Version With Markings To Show Changes Made."

The drawings stand objected to on page 2 of the Office Action. This drawing objection is respectfully traversed for at least the following reasons. Optical pick-ups are well known in the art. Accordingly, they need not be shown in the drawings. Drawings are only needed "where necessary for the understanding of the subject matter sought to be patented." 35 U.S.C. Section 113. This is why many patent applications and patents have no drawings at all. Since optical pick-ups are notoriously well known in the art,

there is no need to illustrate the same in the drawings. The currently claimed inventions are easily understood from the instant application regardless of whether an optical pick-up is shown in the drawings. Accordingly, it is respectfully requested that the drawing objection be withdrawn.

Claims 1, 13 and 14 stand rejected under 35 U.S.C. Section 112, second paragraph. The Office Action contends that "it is unclear as to which end surface is die-bonded and which end surface emits light." This Section 112 rejection is respectfully traversed for at least the following reasons. Claim 1 states "a semiconductor laser chip whose bottom is die-bonded to a bonding surface with a conductive die-bonding paste, said semiconductor laser chip having a light-emitting point at each of opposed end surfaces thereof . . ." Thus, it is clear that the "bottom" of the chip is die-bonded. It is also clear that each end surface of the chip has a light-emitting point. For example, see Fig. 3 of the instant application where the bottom of chip 5 is shown as being die bonded to member 1, and light-emitting points 6 and 7 are provided at the respective end surfaces of the chip. According, since claim 1 is clear and definite, the Section 112 rejection should be withdrawn. The Section 112 rejection should also be withdrawn with respect to claims 13-14.

Claim 1 stands rejected under 35 U.S.C. Section 102(e) as being allegedly anticipated by Spaeth. This Section 102(e) rejection is respectfully traversed for at least the following reasons.

Claim 1 requires that the "conductive die-bonding paste adheres to a lower part of each end surface of the chip, and a highest position of the conductive die-bonding paste

on said lower part of each end surface of the semiconductor laser chip is at a height of more than 0.01 mm from the bonding surface and hence from the bottom of the semiconductor laser chip, but is below the light-emitting point of the semiconductor laser chip." Spaeth fails to disclose or suggest this.

In contrast, Spaeth's bonding layer 8 does not extend up any portion of either end surface of chip 1. Spaeth's drawings clearly illustrate that bonding layer 8 is provided only on the bottom surface of chip 1 (not on the opposing end surfaces as required by claim 1). The thickness of Spaeth's layer 8 is unrelated to whether the layer extends up the side or end surface(s) of the chip. Spaeth is entirely unrelated to the invention of claim 1 in this regard, and cannot possibly anticipate or render obvious the claim. Instead, Spaeth is problematic for the same reasons as prior art Fig. 5 discussed in the instant specification.

Claims 1-3 and 10-16 stand rejected under 35 U.S.C. Section 103(a) as being allegedly unpatentable over the Admitted Prior Art of Figs. 5-6 (APA) in view of Honda. This Section 103(a) rejection is respectfully traversed for at least the following reasons.

Claim 1 requires that "the conductive die-bonding paste adheres to a lower part of each end surface of the chip, and a highest position of the conductive die-bonding paste on said lower part of each end surface of the semiconductor laser chip is at a height of more than 0.01 mm from the bonding surface and hence from the bottom of the semiconductor laser chip, but is below the light-emitting point of the semiconductor laser chip." For example, see Fig. 3 of the instant application where the die-bonding paste 20 adheres to a lower part of each end surface of chip 5. The highest position of the paste 20

proceeding up the end surface(s) is more than 0.01 mm from the bottom of the chip 5, but is below the light-emitting point(s) 6 and/or 7 of the chip 5. The cited art fails to disclose or suggest this either taken alone or in combination.

APA Fig. 5 is problematic for the reasons discussed on pages 1-3 of the instant application. In particular, the metal soldering material 52 used to adhere chip 50 to structure 51 has a very high melting point and is too thin. Reflection problems occur. Moreover, the soldering material 52 of APA Fig. 5 does not extend up the end surface(s) of the chip as required by claim 1. Meanwhile, APA Fig. 6 is problematic in that swelling of paste 56 causes the adhesive to extend up the opposing end surfaces of chip 50 thereby *covering up* the light emitting/receiving points thereof (see pages 4-5 of the instant application). Thus, neither Fig. 5 nor Fig. 6 of the APA disclose or suggest the requirement of claim 1 that "the conductive die-bonding paste adheres to a lower part of each end surface of the chip, and a highest position of the conductive die-bonding paste on said lower part of each end surface of the semiconductor laser chip is at a height of more than 0.01 mm from the bonding surface and hence from the bottom of the semiconductor laser chip, but is below the light-emitting point of the semiconductor laser chip."

There is no suggestion in the art of record for utilizing the epoxy of Honda in APA Figure 6. Moreover, even if the epoxy of Honda was in fact utilized in the APA (which applicant believes would be incorrect in any event), there would still be no disclosure or suggestion of the die-bonding paste adhering to a lower part of each chip end surface to a height of greater than 0.01mm, but to a height below the light emitting point(s) 6 and/or 7

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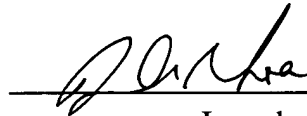
as required by claim 1. Thus, even if the art was combined as alleged in the Office Action, the invention of claim 1 still would not be met. Moreover, hindsight is not permissible.

For at least the foregoing reasons, it is respectfully requested that all rejections be withdrawn and the application passed to issue. If any minor matter remains to be resolved, the Examiner is invited to telephone the undersigned with regard to the same.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS

Please cancel claim 10.

1. (*Amended*) A semiconductor laser apparatus comprising a semiconductor laser chip whose bottom is die-bonded to a bonding surface with a conductive die-bonding paste, said semiconductor laser chip having a light-emitting point at each of opposed end surfaces thereof,

wherein the conductive die-bonding paste adheres to a lower part of each end surface of the chip, and a highest position of the conductive die-bonding paste on said lower part of each end surface of the semiconductor laser chip is at a height of more than 0.01 mm from the bonding surface and hence from the bottom of the semiconductor laser chip, but is below the light-emitting point of the semiconductor laser chip.

13. (*Unamended*) A semiconductor laser apparatus comprising:

a semiconductor laser chip die-bonded to a bonding surface with a conductive die-bonding paste, said semiconductor laser chip having a light-emitting point at at least one end surface thereof,

wherein a highest position at which the conductive die-bonding paste adheres to at least one end surface of the semiconductor laser chip is at a height of more than 0.01 mm

from the bonding surface, but is below the light-emitting point of the semiconductor laser chip; and

wherein the conductive die-bonding paste comprises epoxy resin and at least 80% by weight conductive filler of metal particles or flakes.

14. (*Unamended*) A semiconductor laser apparatus for use in an optical pickup using a three-beam scheme for optical disks, the semiconductor layer apparatus comprising a semiconductor laser chip whose bottom is die-bonded to a bonding surface with a conductive die-bonding paste, said semiconductor laser chip including a light-emitting point at each of opposed end surfaces thereof,

where the conductive die-bonding paste adheres to a lower part of each end surface of the chip from the bottom up to a height below the light emitting point so that when the apparatus is used in the optical pickup an auxiliary beam directed from an optical disk to the lower part of one of the end surfaces is scattered by the conductive die-bonding paste adhering thereto.